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FISH & RICHARDSON PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
SCHLIENTZ, LEAH H	
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1618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/830,195	BUISER ET AL.	
	Examiner	Art Unit	
	Leah Schlientz	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-17,19-31,49-54 and 56-59* is/are pending in the application.

4a) Of the above claim(s) *16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-15,17,19-31,49-54 and 56-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/18/2007 has been entered.

Status of Claims

Claims 1, 21, 22, 54, 56 and 58 have been amended. Claim 55 has been cancelled. Claims 1 – 4, 6 – 17, 19 – 31, 49 – 54 and 56 – 59 are pending, of which claim 16 is withdrawn from consideration at this time as being drawn to a non-elected invention. Claims 1 – 4, 6 – 15, 17, 19 – 31, 49 – 54 and 56 – 59 are readable upon the elected invention and are examined herein on the merits for patentability.

Response to Arguments

Applicant's arguments, see page 9 of the Response, with respect to the rejection of claims 1 – 4, 6 – 17, 19 – 20, 23 – 31 and 49 – 53 under 35 USC 112, first paragraph, have been fully considered. The rejection has been WITHDRAWN as being overcome by amendment.

Applicant's arguments, see page 9 of the Response, with respect to the rejection of claims 15, 17 and 20 under 35 USC 112, first paragraph, have been fully considered. The rejection has been WITHDRAWN as being overcome by amendment.

Applicant's arguments, see page 9 of the Response, with respect to the rejection of claims 1 – 4, 6 – 17, 19 – 31 and 49 – 53 under 35 USC 112, second paragraph, have been fully considered. The rejection has been WITHDRAWN as being overcome by amendment.

Applicant's arguments, see pages 9 – 11 of the Response, with respect to the rejection of claims 1, 2, 8, 9, 15, 17, 19 – 23, 25, 26, 28 – 31 and 49 – 59 under 35 USC 103(a) as being unpatentable over Jacobsen (US 6,530,943) and Greene (US 2002/0177855), in view of Smith *et al.* (US 5,888,930), have been fully considered but they are not persuasive for reasons set forth hereinbelow.

Applicant's arguments, see pages 11 – 12 of the Response, with respect to the rejection of claims 1 – 4, 6 – 15, 17, 19 – 26, 28 – 31 and 49 – 59 under 35 USC 103(a) as being unpatentable over Jacobsen (US 6,530,943) and Greene (US 2002/0177855), in view of Smith *et al.* (US 5,888,930), in further view of Mazzocchi (US 6,605,102), have been fully considered but they are not persuasive for reasons set forth hereinbelow.

Applicant's arguments, see page 12 of the Response, with respect to the rejection of claims 1 – 7, 15, 17, 19, 21, 22, 25 – 31 and 49 – 59 under 35 USC 103(a) as being unpatentable over Jacobsen (US 6,530,943) in view of Mangin (WO 01/66016), have been fully considered but they are not persuasive for reasons set forth hereinbelow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 8, 9, 15, 17, 19 – 23, 25, 26, 28 – 31, 49 – 54 and 56 – 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen (US 6,530,943) and Greene (US 2002/0177855), in view of Smith *et al.* (US 5,888,930).

Jacobsen discloses an embolic device comprised of a linear sequence of flexibly interconnected miniature beads. The device generally comprises a flexible elongated filament having a linear sequence of beads disposed thereon. The beads may be fixedly connected to the filament. The string of beads may be configured to the exact length needed. The beads may be porous (abstract). The embolic device is used to occlude blood flow and/or initiate blood clotting upon introduction to the body via a catheter (column 1, lines 14 – 25). The string of beads includes a filament (i.e. a link) and beads. The beads have diameters from 0.002 inches to 0.0018 inches, and may be made of a variety of materials, including polymers, radioopaque polymers, metals. The string of beads may be comprised of beads of several different materials (column 4, lines 25 – 40). The filament can be a multi or monofilament polymer (column 5, line 21). The string of beads may be configured as a drug delivery device, wherein the beads are porous and contain a medicament for controlled release into the interior of the body (column 2, lines 44 – 47), as set forth above.

Greene discloses an embolization device for occluding a body cavity which includes one or more elongated hydrophilic embolizing elements non-releasably carried along the length of an elongated filamentous carrier (abstract). The embolizing agents (micropellets) may be made of a macroporous polymeric material or a porous, environmentally-sensitive, expansile hydrogel (abstract and paragraphs 0085 – 0088). The carrier (i.e. link) is preferably a nickel/titanium wire, but may also be formed from a polymer (paragraph 0093). The carrier has a diameter of approximately 0.04 mm (i.e. 0.0015 inches) (paragraph 0092). The length of the carrier is variable depending on the

size of the vascular site to be embolized (paragraph 0085). See also Figure 1. The device may be contained in saline solution (paragraph 0029). The devices may be used to deliver therapeutic agents (paragraph 0141).

Jacobsen and Greene do not specifically recite that the porous beads have an interior and surface regions with a density of large pores, wherein the density of pores of the interior region is greater than that of the surface region.

Smith discloses polymeric microporous beads having an anisotropic pore structure of large pores in the interior and smaller pores at the surface, the gradation of pore sizes between the interior and surface being continuous (abstract). It is noted that the instantly claimed particles do not prohibit the size of the interior pores being larger than that of the surface pores. It is interpreted that the particles of Smith demonstrate a larger pore density on the interior of the particle than on the surface, and accordingly that the particles of Smith are within the scope of those claimed (see Figure 1). The pores can be loaded with an active ingredient, and the particles are used as controlled-release of an active agent (column 1 – 2). The particles are generally spherical in shape, with diameters ranging from about 5 microns to about 5 mm (column 2, line 49).

Smith fails to teach particles which are connected.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize the porous particles of Smith as the porous beads in the embolic device comprised of a linear sequence of flexibly interconnected miniature beads, taught by Jacobsen, or the embolic micropellets positioned along the length of a carrier, taught by Greene, because the embolic devices of Jacobsen or Greene and the

particles of Smith are used for controlled release drug delivery (see Jacobsen column 2, lines 44 – 47). One would have been motivated to do so because Smith specifically teaches that microporous beads having an asymmetric pore structure are particularly useful for delivery of active agents for an extended period of time (see Smith, column 2, lines 15 – 30). Regarding claims 3, 4, 6, 7 and 49 – 53, Jacobsen teaches that the carriers may be any desired length, and thus it would have been obvious to one of ordinary skill in the art to selectively prepare links within the claimed ranges. Regarding claim 56, Greene teaches a particularly desirable porous polymeric material to be PVA (column 11, lines 55+).

Applicant argues on pages 9 – 11 of the Response that Jacobsen does not disclose how to make his particle chain, and that in order for the prior art to render the subject matter covered by a claim obvious, the prior art must enable one skilled in the art how to make and use the subject matter.

This is found non-persuasive because prior art is presumed to be operable/enabling per MPEP 2121. When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability. *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). In addition, under 35 U.S.C. 282 a patent shall be presumed valid (i.e. and thus is presumed to meet the enablement requirement).

Applicant argues that Greene's methods of making his embolization device are not compatible with Smith's methods of making his beads because Greene's methods involve putting a polymer member into a tubular holder followed by coaxially skewering the polymer member with the filamentous carrier or disposing a filamentous carrier in a mold followed by transferring polymer under pressure into the mold, and that in contrast Smith makes his particles by spraying droplets of a polymer solution into a precipitation bath and drying to form individual beads. Applicant argues that one skilled in the art would not be motivated to try to combine the references in the suggested manner, and even if one had been so motivated, the references would not have enabled one to make the subject matter of the claimed invention.

This is found non-persuasive because, it is unclear why, for example, the polymeric particles of Smith could not at least be skewered in order to arrive at linked particles having the claimed pore size distribution. Furthermore, see MPEP 2145 (III) regarding arguing that prior art devices are not physically combinable. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art." *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). See also *In re Sneed*, 710 F.2d 1544, 1550, 218 USPQ 385, 389 (Fed. Cir. 1983) ("[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review."); and *In re Nievelt*, 482 F.2d 965, 179 USPQ 224,

226 (CCPA 1973) ("Combining the teachings of references does not involve an ability to combine their specific structures.").

Applicant further argues that there is no suggestion to combine the references of Jacobsen, Greene and Smith, and even the references were combined, the result would not be covered by the claims. Regarding Applicant's assertion that there is no suggestion to combine the references, the Supreme Court in KSR International Co. v. Teleflex Inc., 550 U.S. ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in Graham. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. See MPEP 2143. In addition, "The Courts have made clear that the teaching, suggestion, or motivation test is flexible and an explicit suggestion to combine the prior art is not necessary. The motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d. 1366, 80 USPQ2d 1649 (Fed. Cir. 2006)." In the instant case, the examiner has provided reasoning that one of ordinary skill in the art would have been motivated to combine the teachings of the cited art by inclusion of particles having an assymetric pore size distribution, as taught by Smith, as the porous particles in the embolic devices of Jacobsen or Green having porous particles positioned along a

carrier, because the embolic devices of Jacobsen or Green are useful for controlled release drug delivery, and Smith specifically teaches that microporous beads having an asymmetric pore structure are particularly useful for delivery of active agents for an extended period of time (see Smith, column 2, lines 15 – 30). Applicant's statement that if the references were combined, the result would not be covered by the claims is unclear because Jacobsen and Greene clearly teach linked porous particles, and Smith teaches porous particles having the claimed pore size distribution. Therefore, it is unclear what portion of the claims has not been addressed upon the combination of the teachings of the cited references.

Claims 1 – 4, 6 – 15, 17, 19 – 26, 28 – 31, 49 – 54 and 56 – 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen (US 6,530,943) and Greene (US 2002/0177855), in view of Smith *et al.* (US 5,888,930), in further view of Mazzocchi (US 6,605,102).

Jacobsen discloses an embolic device comprised of a linear sequence of flexibly interconnected miniature beads. The beads are porous and contain a medicament for controlled release into the interior of the body, as set forth above.

Greene discloses an embolization device for occluding a body cavity which includes one or more elongated, hydrophilic embolizing elements non-releasably carried along the length of an elongated filamentous carrier, as set forth above.

Jacobsen and Greene do not specifically recite that the porous beads have an interior and surface regions with a density of large pores, wherein the density of pores

of the interior region is greater than that of the surface region. Jacobsen and Green also fail to specifically recite the length of the particle chain or the aspect ratio.

Smith discloses polymeric microporous beads having an anisotropic pore structure of large pores in the interior and smaller pores at the surface, the gradation of pore sizes between the interior and surface being continuous. The beads may vary in diameter from about 5 microns to about 5 mm, as set forth above, thus it is interpreted that a variety of sizes of particles may be used.

Smith fails to teach particles which are connected.

Mazzocchi teaches embolic devices which may have a variety of structures (abstract). The aspect ratio of the device ranges from about 1.0 to about 3.0, where an aspect ratio of 2.0 is preferred (column 11, lines 59+). The length of the devices may vary, but may be for example 25 mm (column 12, line 62). Mazzocchi does not teach that the embolic device is a particle chain.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize the porous particles of Smith as the porous beads in the embolic device comprised of a linear sequence of flexibly interconnected miniature beads, taught by Jacobsen, or the embolic micropellets positioned along the length of a carrier, taught by Greene, because both the embolic devices of Jacobsen or Greene and the particles of Smith are used for controlled release drug delivery (see Jacobsen column 2, lines 44 – 47). One would have been motivated to do so because Smith specifically teaches that asymmetric microporous beads control the release of an agent from the particle, and are particularly useful for delivery of desired drug dosages for an

extended period of time (see Smith, column 1 – 2). Regarding the specific dimensions of the devices, Greene also teaches an elongated carrier with embolic agents (micropellets) attached thereto, and teaches the width of the carrier (i.e. chain or link) to be within the claimed range, and also teaches that the length of the carrier can be varied depending on the vascular site to be embolized (column 11, line 20), and accordingly it would have been obvious to utilize chain with a variety of lengths (i.e. thereby effecting the aspect ratio), especially because Mazzocchi further shows that embolic devices are generally known in the art to have length / width / aspect ratio dimensions within the claimed ranges. Regarding claims 3, 4, 6, 7 and 49 – 53, Jacobsen teaches that the carriers may be any desired length, and thus it would have been obvious to one of ordinary skill in the art to selectively prepare links within the claimed ranges. Regarding claim 56, Greene teaches a particularly desirable porous polymeric material to be PVA (column 11, lines 55+).

Applicant argues on pages 11 – 12 of the Response that, for reasons noted above, the combination of Jacobsen and Greene, in view of Smith does not render obvious the claimed subject matter, and that Mazzocchi does not cure the deficiencies of these references.

This is found non-persuasive for reasons set forth above. The Mazzochhi reference is included to address that the claimed aspect ratios are known in the art to be desirable in an embolic device.

Claims 1 – 7, 15, 17, 19, 21, 22, 25 – 31, 49 – 54 and 56 – 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen (US 6,530,943) in view of Mangin (WO 01/66016).

Jacobsen discloses an embolic device comprised of a linear sequence of flexibly interconnected miniature beads. The device generally comprises a flexible elongated filament having a linear sequence of beads disposed thereon. The beads may be fixedly connected to the filament. The beads may be integrally formed on the material of the filament (column 4, line 24). The string of beads may be configured to the exact length needed. The beads may be porous (abstract). The embolic device is used to occlude blood flow and/or initiate blood clotting upon introduction to the body via a catheter (column 1, lines 14 – 25). The string of beads includes a filament (i.e. a link) and beads. The beads have diameters from 0.002 inches to 0.0018 inches, and may be made of a variety of materials, including polymers, radioopaque polymers, metals. The string of beads may be comprised of beads of several different materials (column 4, lines 25 – 40). The filament can be a multi or monofilament polymer (column 5, line 21). The string of beads may be configured as a drug delivery device, wherein the beads are porous and contain a medicament for controlled release into the interior of the body (column 2, lines 44 – 47).

Jacobsen does not specifically recite that the polymer is polyvinyl alcohol, and does not specifically recite that the porous beads have interior and surface regions wherein the mean size of pores of the interior region is greater than the mean size of pores of the surface region.

Mangin discloses embolic particles suitable for effectuating embolization or occlusion of a vessel or duct (abstract). Such particles have one or more voids on the surface and present within the particles. The particles may be a variety of sizes (see page 7, lines 18 – 35). The voids may be filled with biologically active agents or drugs page 9, line 23 – 26. The embolic particles are preferably made of PVA (page 4, line 34). The particles appear to be capable of having larger pore sizes, on average, in an "interior region" of the particle as opposed to a "surface region." See Figure B. The examiner arbitrarily defines a "surface region" and an "interior region," as set forth in the Office Action mailed 8/23/2007.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to apply porous PVA particles, such as those taught by Mangin, in an interconnected form, as taught in the device of Jacobsen because both the porous particles of Mangin and the interconnected porous beads of Jacobsen are used for embolization. One would have been motivated to do so, and would have had a reasonable expectation of success in doing so, because Jacobsen specifically teaches that hydrophilic particles which are used for occluding blood flow tend to become dislodged from the target site and migrate within the body potentially causing trauma or unwanted thrombosis, and that providing a device comprising a linear sequence of interconnected miniature beads is superior to individual particles because the device is less susceptible to migration within the body (column 1 – 2).

Applicant argues on page 12 of the Response that Jacobsen does not disclose how to make his particle chain and that Mangin does not explicitly disclose or inherently disclose an embolic particle having an interior region with pores of a mean size and a surface region with pores of a mean size, where the mean size of the pores of the interior region is greater than the mean size of the interior region is greater than the mean size of the pores of the surface region.

This is found non-persuasive because, regarding the Jacobsen reference, prior art is presumed to be operable/enabling per MPEP 2121. When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability. *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). In addition, under 35 U.S.C. 282 a patent shall be presumed valid (i.e. and thus is presumed to meet the enablement requirement). Regarding the Mangin reference, the particles appear to be capable of having larger pore sizes, or voids, on average, in an "interior region" of the particle as opposed to a "surface region," for example as shown in the cross-section of a particle shown in Figure B.

Applicant further argues that there is no suggestion to combine the references of Jacobsen and Mangin, and even the references were combined, the result would not be covered by the claims. Regarding Applicant's assertion that there is no suggestion to combine the references, the Supreme Court in KSR International Co. v. Teleflex Inc., 550 U.S. ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to

support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in Graham. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in KSR noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. See MPEP 2143. In addition, "The Courts have made clear that the teaching, suggestion, or motivation test is flexible and an explicit suggestion to combine the prior art is not necessary. The motivation to combine may be implicit and may be found in the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.,* 464 F.3d. 1366, 80 USPQ2d 1649 (Fed. Cir. 2006)." In the instant case, the examiner has provided reasoning that one of ordinary skill in the art would have been motivated to combine the teachings of the cited art by inclusion of porous PVA particles, such as those taught by Mangin, in an interconnected form because Jacobsen specifically teaches that hydrophilic particles which are used for occluding blood flow tend to become dislodged from the target site and migrate within the body potentially causing trauma or unwanted thrombosis, and that providing a device comprising a linear sequence of interconnected miniature beads is superior to individual particles because the device is less susceptible to migration within the body (column 1 – 2). Applicant's statement that if the references were combined, the result would not be covered by the claims is unclear because Jacobsen clearly teach linked porous particles, and Mangin teaches porous particles which appear to be capable of having the claimed pore size

distribution. Therefore, it is unclear what portion of the claims has not been addressed upon the combination of the teachings of the cited references.

New Grounds for Rejection

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 – 4, 6 – 15, 17, 19 – 31 and 49 – 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are drawn to a composition comprising a particle chain having at least two connected particles and a link that connects the at least two connected particles. In lines 8 – 9 of the claim it is recited that "at least one of the at least two connected particles has an interior region with pores having a mean size *a density of large pores* and a surface region with pores having a mean size..." In line 11 of the claim it is recited that "the mean size of the *density of large* pores of the interior region of the at least one of the at least two connected particles..." Such recitations are unclear. It is interpreted, based on the text of the amendment to claim 1 filed 6/5/2007, that the claim 1 contains a typographical error wherein the recitation of the phrase "density of large pores" is inadvertently included in the instant claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 – 4, 6, 7, 15, 17, 19 – 23, 25 – 31, 49 – 54 and 56 - 59 are rejected under 35 U.S.C. 103(a) as being obvious over Jacobsen *et al.* (US 6,530,934) in view of Lanphere *et al.* (US 2003/0185895).

It is noted by the examiner that the following rejection was applied in the non-final office action mailed 6/5/2007, but was withdrawn in the office action mailed 8/23/2007 due to Applicant's statement under 35 U.S.C. 103(c) that the Lanphere reference, which qualifies as art under 35 U.S.C. 102(e), was "at the time the invention covered by the claims was made was owned by the same entity or subject to an obligation of assignment to the same entity." Upon further consideration, however, it is noted that the Lanphere document qualifies as art under 35 U.S.C. 102(a) as well as 102(e), and

thus the reference is not eligible for dismissal via a 103(c) statement. Accordingly, the rejection is reapplied.

Jacobsen discloses an embolic device comprised of a linear sequence of flexibly interconnected miniature beads. The device generally comprises a flexible elongated filament having a linear sequence of beads disposed thereon. The beads may be fixedly connected to the filament. The string of beads may be configured to the exact length needed. The beads may be porous (abstract). The embolic device is used to occlude blood flow and/or initiate blood clotting upon introduction to the body via a catheter (column 1, lines 14 – 25). The string of beads includes a filament (i.e. a link) and beads. The beads have diameters from 0.002 inches to 0.0018 inches, and may be made of a variety of materials, including polymers, radioopaque polymers, metals. The string of beads may be comprised of beads of several different materials (column 4, lines 25 – 40). The filament can be a multi or monofilament polymer (column 5, line 21). The string of beads may be configured as a drug delivery device, wherein the beads are porous and contain a medicament for controlled release into the interior of the body (column 2, lines 44 – 47).

Jacobsen does not specifically recite that the porous beads have an interior and surface regions with a density of large pores, wherein the density of pores of the interior region is greater than that of the surface region.

Lanphere discloses a drug delivery device which is a substantially spherical polymer particle having an internal reservoir region including relatively large pores and a metering region substantially surrounding the reservoir region having fewer relatively

large pores (paragraph 0004). A sustained, controlled-dosage release of a therapeutic agent can be achieved using the particles (paragraph 0010). The particles have a diameter in the range of 1 cm or less, e.g., 5 mm to 1 mm or less, e.g., about 1200 microns or less, and about 10 microns or more, e.g. about 400 microns or more and the pores are about 50 or 35 to 0.01 micron. Preferably, the particles are classified in size ranges of about 500-700 microns, about 700-900 microns, or about 900-1200 microns. The particles have a mean diameter in approximately the middle of the range and variance of about 20% or less, e.g. 15% or 10% or less (paragraph 0025). The particles can be used in chemoembolization (paragraph 0066). The particles are suspended in a carrier fluid, which may include saline and a contrast solution (paragraph 0030). The particles are preferably PVA (paragraph 0021).

Lanphere fails to recite that at least two particles are connected.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to utilize the porous particles of Lanphere as the porous beads in the embolic device comprised of a linear sequence of flexibly interconnected miniature beads, taught by Jacobsen, because both the embolic device of Jacobsen and the embolic particles of Lanphere are used for embolization and for controlled release drug delivery (see Jacobsen column 2, lines 44 – 47). One would have been motivated to do so because Lanphere specifically teaches that a polymeric particle having an internal reservoir region including relatively large pores and a metering region having fewer relatively large pores controls the release of an agent from the particle, and are particularly useful for delivery of desired drug dosages for an extended period of time

(see Lanphere paragraphs 0003 – 0010). It would have been further obvious to one of ordinary skill in the art at the time of the instant invention to apply the porous PVA particles taught by Lanphere in an interconnected form, as taught in the device of Jacobsen, because both the porous particles of Lanphere and the interconnected porous beads of Jacobsen are used for embolization. One would have been motivated to do so, and would have had a reasonable expectation of success in doing so, because Jacobsen specifically teaches that hydrophilic particles which are used for occluding blood flow tend to become dislodged from the target site and migrate within the body potentially causing trauma or unwanted thrombosis, and that providing a device comprising a linear sequence of interconnected miniature beads is superior to individual particles because the device is less susceptible to migration within the body (column 1 – 2). Regarding claims 3, 4, 6, 7 and 49 – 53, Jacobsen teaches that the carriers may be any desired length, and thus it would have been obvious to one of ordinary skill in the art to selectively prepare links within the claimed ranges.

Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is 571-272-9928. The examiner can normally be reached on Monday - Friday 8 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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LHS

MICHAEL G. HARTLEY
SUPERVISORY PATENT EXAMINER